APPENDIX A
POTENTIAL WATERSHED PARTNERS SUMMARY DESCRIPTIONS

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

The Water Quality Division is one of three divisions of the Arizona Department of Environmental Quality. The others are the Air Quality Division and the Waste Programs Division. The Water Quality Division is responsible for administering and enforcing most state laws protecting the state's water resources. The state water quality laws include the following:

- Adoption of water quality standards within the state, in general, for navigable waters, and for aquifers, along with water quality monitoring to determine compliance with applicable water quality standards;
- Administration of the Aquifer Protection Permit Program, including the adoption of best management practices for regulated agricultural activities;
- Remedial actions involving the release of hazardous substances which impact state waters;
- The state Water Quality Assurance Revolving Fund (WQARF) to finance remedial investigations and clean-ups of hazardous waste releases, along with a portion of the ongoing water quality sampling to track improvement or degradation of water quality;
- Dry well registration;
- Drinking water system regulation;
- Regulation of wastewater collection and treatment systems; and
- Financing of wastewater facilities and nonpoint source pollution control projects.

Recent amendments to the federal Safe Drinking Water Act include the establishment of a revolving fund in each state to finance improvements to public drinking water systems as well as a source water protection program to prevent contamination of drinking water supplies. Implementation of both of these provisions will require state authorizing legislation, hence specific details on these programs are not yet known.

Water Quality Division Director's Office

The Water Quality Division director functions as the overall executive manager for the division and serves on the department's management team. The division director is named by the ADEQ director and nominally serves at the pleasure of the governor. The Water Quality Division director is responsible for establishing and maintaining policies relating to water quality, overseeing the division's budget, directing the activities of subordinate section managers, and providing input to the agency, governor, and legislature on environmental legislation and the strategic direction of the department.

Senior technical advisors to the division director conduct much of the day-to-day research on technical/policy issues and development of specific strategies for implementing water quality programs. Clerical and administrative support staff handle the day-to-day communication with visitors, callers, and corespondents, along with maintaining financial and budgetary documentation.

The roles of the Division Director's Office in the context of a watershed framework can include the following:

- Providing leadership on the pursuit of watershed-based water quality management,
- Assigning division staff and managers to support watershed-based activities,
- Acting as liaison to the other divisions for watershed or water quality-related programs, and
- Development and refinement of the watershed framework in conjunction with the individual water quality programs.
- Chairperson for the ADEQ Section Managers Round Table.

Water Protection Approvals and Permits Section

The Water Protection Approvals and Permits Section administers the Aquifer Protection Permit (APP), Wastewater Reuse, and Dry Well Registration programs. APPs are issued for "discharging" facilities, including a wide variety of industrial sites, mining activities, and wastewater treatment facilities. A "discharge" is defined as the addition of a pollutant from a facility either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability that the pollutant will reach an aquifer. In addition, there are specific categories of facility types (e.g. surface impoundments, injection wells, point source discharges to navigable waters) that are automatically considered to be discharging and thus in need of a permit.

Facilities are required to demonstrate that they will utilize the best available demonstrated control technology (BADCT) and that they will not violate or contribute to the violation of an aquifer water quality standard, or further degrade the aquifer if standards are already exceeded, at a point of compliance in the aquifer. Many facilities operate under general permits if they comply with requirements in rule or statute. APP Program resources are largely devoted to issuing individual permits to new and existing facilities for operation and closure.

Reuse permits are issued for the reuse of reclaimed wastewater. Generally the wastewater is to be consumptively used after treatment to a level consistent with its end use, based on potential health concerns associated with that end use (e.g. open or restricted access, orchards, livestock watering).

All dry wells for stormwater disposal are registered. An APP is also required in areas where hazardous substances are used, stored, loaded, or treated.

In FY 1995 there were approximately 19 project officers, engineers, and hydrologists in the Permits units with 329 permits in process backlogged in the APP and Reuse programs. Ninety-seven permit applications were received and 53 permits were issued in FY 95, for a total of 155 permits issued through the end of the fiscal year. In addition to the backlog, approximately 270 existing facilities remain to be called in, and an unknown number of new facilities will submit permit applications. Staff also registers approximately 200 dry wells per month.

Following is a description of roles and responsibilities for the Water Protection Approvals and Permits Section by step in the watershed management cycle:

Step 1: Stakeholder Outreach and Involvement

- The Section will provide presentations at outreach sessions regarding the APP, Reuse, and Dry Well programs, including permitting and compliance activities within watershed boundaries.

Step 2: Collect and Evaluate Watershed Data

- Staff will provide information from databases and files for APP, Reuse, and Dry Well facilities in the watershed.
- Staff will also assist in the evaluation of data from APP, Reuse, and Dry Well databases and files as part of the watershed team.

Step 3: List and Target Environmental Concerns

- Section staff will participate in team and stakeholder meetings to assist in targeting areas or facilities of concern.

Step 4: Develop Management Strategies and Measures of Success

- The Section will participate in team and stakeholder meetings to develop management strategies based on available resources, priorities, and program mandates, and develop appropriate measures of success based on environmental benefits.

Step 5: Compile the Watershed Plan

- The Section will participate as a member of the team in the compilation of the watershed plan based on previous work products.

Step 6: Implement and Evaluate Watershed Plan

- As resources allow, the Section will implement the plan by focusing the permitting activities of available personnel within the watershed.
- The Section will also provide for participation in the team and stakeholder meetings to evaluate plan accomplishments and areas of concern related to plan revisions and input into the new plan cycle.

Water Quality Compliance Program

The Water Quality Compliance Program monitors and regulates toxic and other pollutants in industrial and domestic wastewater discharged to surface or groundwater from over 2,000 point sources (i.e., a pipe or other discreet conveyance from a wastewater treatment plant, industry, mine, stormwater outfall, etc.). The program is responsible for identifying nonpoint sources of water pollution and reducing or eliminating these pollutants.

Specifically, the program ensures compliance with aquifer and surface water quality standards, aquifer protection permit conditions, effluent reuse permit conditions and domestic wastewater construction approval requirements.

The compliance program is composed of several elements and approaches including:

- public outreach, facility-specific, and activity-specific technical assistance,
- review of self-reported monitoring data required by permit or rule,
- compliance inspections which evaluate the facility's physical condition, operation, and maintenance,
- complaint investigation,
- tracking long-term compliance through the "water quality protection database,"
- informal enforcement actions (e.g., verbal warnings, conferences, written notices of violation, etc.), and
- formal enforcement actions (administrative and judicial responses to significant or prolonged noncompliance, often including a civil penalty).

Inspections: Field Services staff in Flagstaff, Tucson and Phoenix have primary responsibility for conducting field inspections and investigating complaints. Activities include site evaluations (domestic wastewater facilities only), construction assurance inspections, compliance assurance (operation and maintenance) inspections, and complaint investigations.

The Water Quality Data Tracking program maintains data files to support the Water Quality Enforcement program. Specific activities include maintaining the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report (DMR) self-monitoring data, producing a quarterly noncompliance report (QNCR), and performing compliance-data analysis on domestic sources of water pollution.

Nonpoint Source Program

Arizona's Nonpoint Source Program emphasizes the need for public participation, education, and technical assistance and outreach. Nonpoint source advisory groups assist in BMP development and aid coordination between federal, state and local agencies, and interested publics. Memorandums of Understanding (MOUs) have been developed with U.S. Department of Agriculture (USDA), Forest Service (USFS), Bureau of Land Management (BLM), Arizona Department of Transportation (ADOT), and U.S. Department of Agriculture-Natural Resource Conservation Service (NRCS).

The Nonpoint Source Program prepares, updates, and implements the State Nonpoint Source Water Quality Management Plan in accordance with the Clean Water Act. The program is both regulatory and nonregulatory in approach. Activities within the NPS program include:

- Irrigated agriculture and confined animal feeding operations
- Forestry (silviculture) water pollution management program
- Grazing nonpoint source pollution program

- Resource extraction
- Urban runoff
- Hydrologic/habitat modification-riparian areas and wetlands
- Public education and out reach
- Statewide septic system issues

The Nonpoint Source Program also oversees Clean Water Act Section 319(h) demonstration project grants. Currently there are twenty-one 319(h) demonstration projects in the state with a total funding that exceeds $1.1 million.

To facilitate BMP implementation at the local level, management zones have been delineated within the state. Community-based NPS programs are being implemented in the Verde and San Carlos/Safford/Duncan NPS Management Zones. In addition, the NPS program is coordinating nonpoint source control efforts with the New Mexico Environmental Department and U.S. EPA Regions 6 and 9 for the interstate Gila Watershed. The "Gila Monster" is an interstate watershed program developed to facilitate coordination among federal, state, local governments, communities and private citizens for the Gila watershed.

NPS management zone activities are being broadened and merged into the ADEQ watershed management approach. Future NPS geographically-based efforts will be integrated with point source environmental programs for a comprehensive watershed approach.

The following is a description of potential roles and responsibilities of the Water Quality Compliance Section by watershed management step:

Step 1: Stakeholder Outreach and Involvement

- Dischargers can be notified of the watershed planning process through Section records. The Nonpoint Source Program can use their existing network of landowners receiving assistance to contact stakeholders.
- The Section can provide substantial information on existing and ongoing regulatory and voluntary pollution control measures (i.e., watershed water quality management history). The Section can also provide information on regulatory requirements for point source dischargers and program opportunities for nonpoint source.

Step 2: Collect and Evaluate Watershed Data

- The Section can provide existing information on point source pollutant loadings. The Nonpoint Source Program can provide technical assistance for locating source areas and estimating their pollutant loads.

Step 3: List and Target Environmental Concerns

- The section will have substantial input to identifying both point and nonpoint sources of pollution and can help to identify where compliance problems are contributing to water quality problems.

Step 4: Develop Management Strategies and Measures of Success

- The Water Quality Compliance Section plays a key role in the development of management strategies. The advisory committee may decide that better compliance with existing regulations would be the best solution to watershed problems. The Section could support an effort to target facilities with poor compliance records. Alternatively, the Nonpoint Source Program could provide technical support and funding for the development and implementation of watershed scale or targeted BMPs for nonpoint source pollution.
- Because of the Section's knowledge and involvement with both point source and nonpoint source programs, a long-term contribution could be to develop pollutant trading management strategies for watersheds.

Step 5: Compile the Watershed Plan

- The Section could take the lead on documenting point source and nonpoint source controls that are to be implemented within the watershed.

Step 6: Implement and Evaluate Watershed Plan

- The Section would be key to implementing the adopted compliance monitoring strategy and providing technical assistance for targeted nonpoint source projects.

Drinking Water Section

The Drinking Water Section is responsible for four major programs: Program Development, Compliance Tracking and Enforcement, Technical Engineering review, and Field Engineering Inspections. Below is a description of activities and functions within the Drinking Water Section:

Primacy Maintenance: Arizona has been designated a primacy state by the EPA. This means the State has been granted authority to implement and enforce all aspects of the Safe Drinking Water Act (SDWA). For a state to maintain primacy deadlines for implementation of various aspects of the SDWA must be met. The Program Development and Outreach Unit tracks these deadlines to ensure all are met within the specified time frames.

Rule Development: The Drinking Water Section is required to incorporate any federal rules into the Arizona Administrative Code within 18 months of promulgation on the federal level. The Program Development and Outreach Unit is responsible for drafting the rule language, obtaining certification of the rules from the Attorney General's Office, and having the rules signed and enacted by the secretary of state.

Policy Development: All units within the Drinking Water Section are responsible for developing and finalizing Drinking Water Section policies designed to clarify areas of existing rules and to establish internal program policy and procedures.

Development of Monitoring Waiver Program: A monitoring waiver program allows States to determine the frequency at which a public water system must sample for regulated contaminants and base that frequency on the water system's degree of vulnerability. These monitoring frequencies will often be less stringent than those specified in the Arizona Administrative Code. The Program Development and Outreach Unit is responsible for developing the Monitoring Waiver Program methodology and procedures and for obtaining EPA approval of this program.

Wellhead Protection Program: Wellhead protection is a voluntary, proactive approach to managing and protecting water resources used for drinking water. The Program Development and Outreach Unit is responsible for administration of this program. The unit's responsibilities include providing guidance, coordination assistance, and assistance with public education to systems developing wellhead protection programs in Arizona.

Certified Operator Program: The Program Development and Outreach Unit is responsible for administering this program. The program administers tests and maintains records which are used to certify qualified persons for operation of public water supply systems.

Compliance Assistance: The Program Development and Outreach Unit, Compliance Tracking and Enforcement Unit, and the Field Engineering Inspections Unit are all responsible for providing technical assistance regarding issues related to the operation, maintenance, sampling protocol, record keeping, and system viability through onsite visits, one-on-one assistance, and Drinking Water Section outreach efforts.

Compliance Tracking: There currently are 1,800 regulated public water systems in Arizona. The Compliance Tracking and Enforcement Unit is responsible for receiving and maintaining all records, including analytical reports for each water system. Records are maintained through both the Drinking Water Sections database and hard copy files.

Enforcement: The Compliance Tracking and Enforcement Unit is responsible for enforcing both state and federal drinking water rules. The unit issues notices of violation, negotiates consent agreements, obtains temporary restraining orders, and, when necessary, pursues enforcement cases through the Superior Court of Arizona.

Source and System Approvals: All new sources which are to be used as supply for public water systems must meet specified construction and design requirements. New distribution systems and extensions and additions to existing systems must be reviewed to ensure construction is performed properly and the design is capable of sustaining the population base of the water system. The Technical Engineering and Field Engineering Inspections Units are responsible for administration of this program.

Sanitary Site Survey: All regulated public water systems are required to meet operation and maintenance standards specified in the Arizona Administrative Code. The Field Engineering and Inspections Unit is responsible for performing sanitary site surveys for all regulated public water systems within specified time frames.

The following is a description of roles and responsibilities of the Drinking Water Section by watershed management step:

Step 1: Stakeholder Outreach and Involvement

- The Section can make presentations at outreach sessions regarding the Drinking Water Rules, Source and Water System approvals, Technical Review Process, Wellhead Protection, Certified Operator requirements, and compliance activities within the Watershed boundaries.

Step 2: Collect and Evaluate Watershed Data

- The Drinking Water Section will provide information and analytical data from database and files for drinking water facilities and activities in the watershed. The staff will provide technical assistance with interpretation of data and files.

Step 3: List and Target Environmental Concerns

- Drinking Water staff will participate in team and stakeholder meetings to assist targeting and prioritizing of areas of concern within the watershed.

Step 4: Develop Management Strategies and Measures of Success

- The Section will participate in team and stakeholder meetings to develop management strategies and will provide information on resource availability, priorities, and mandates. Staff will assist in developing measures of success for watershed activities related to drinking water and wellhead protection activities.

Step 5: Compile the Watershed Plan

- The Section will participate in watershed team efforts to compile the drinking water aspects of the watershed plan.

Step 6: Implement and Evaluate Watershed Plan

- The Drinking Water Section will provide information on availability of Section resources for implementation of watershed activities and assist in the evaluation of the watershed plan.

Hydrologic Support and Assessment Section

The Hydrologic Support and Assessment Section provides the agency with scientific and technical support for investigating ground water and surface water pollution stemming from spills, illegal discharges and unregulated sources. Monitoring programs within the Section collect, assess and maintain data about ambient water quality conditions. Scientific database development, geographical information system and global positioning system (GPS) support activities are also provided by the section. The major responsibilities of the section include following:

Surface Water Monitoring

- Ambient surface water quality monitoring
- Targeted surface water quality monitoring
- Lake monitoring and assessment
- Complaint investigations and emergency response support
- Technical procedures development
- Technical training and public outreach

Groundwater Monitoring

- Ambient ground water quality monitoring
- Pesticide rule-making
- Database development and maintenance
- Field equipment management

Hydrologic Analysis

- Targeted ground water quality monitoring

Database development and maintenance

- Global positioning system (GPS) support
- Geographical information system (GIS) support
- Technical training and public outreach

Water Quality Assessment

- Water quality assessments
- Water quality standards development
- Biocriteria standards development
- Priority pollutant sampling and assessment
- Watershed management coordination and planning
- Targeted groundwater quality monitoring

- Constructed wetlands research

The watershed framework provides increased opportunities to coordinate water quality monitoring and data sharing. This, in turn, will enable all monitoring programs to reduce their monitoring costs while expanding the amount of monitoring performed. Potential partners in monitoring include other federal, state, and local agencies, private entities and educational institutions. ADEQ monitoring programs will work with watershed advisory committees and the general public to establish monitoring priorities within their watershed.

The ability to focus ADEQ monitoring resources within an average of two watersheds at a time will produce data that may be used to develop site-specific water quality standards. Site-specific water quality standards will be used to write discharge permit limits specific to the receiving water thus providing enhanced public health and ecosystem protection.

The Hydrologic Support and Assessment Section will support educational efforts to help Advisory Committees use environmental indicators as a tool for assessing water quality. Specific environmental indicators would then be adopted for use in each watershed.

The collection of information regarding past and present pollution sources will rely heavily upon input from the local residents who may have first-hand knowledge of water-quality problem areas in their watershed. Local perceptions of water-quality problems can be verified with targeted monitoring.

Utilization of databases, GIS, and GPS in the data collection and assessment phases of the watershed approach will be crucial to gathering and analyzing existing data. These electronic systems will also be necessary for any new data collection efforts. Networking with potential monitoring partners to standardize data collection and analysis protocols, database and GIS formats, and GPS requirements will allow for electronic data compilation and the direct comparison of all monitoring data.

Data assessments will be easier to perform and will provide meaningful information under the watershed framework. Having multiagency water quality data on one database will reduce the time that is currently spent on locating and acquiring data from each agency. Assessments may use environmental indicators to identify how water-quality problems affect humans and the ecosystem they live in. Assessments will identify data gaps that can be addressed in the next scheduled round of monitoring.

The following is a description of roles and responsibilities of the Hydrologic Support and Assessment Section by watershed management step:

Step 1: Stakeholder Outreach and Involvement

- The Hydrologic Support and Assessment Section can contribute data assessments and expertise for watershed water quality status presentations during outreach.
- The Section can also assist in preparing the information needs assessment report that responds to stakeholder goals and objectives for the watershed.

Step 2: Collect and Evaluate Watershed Data

- The Section will play a central role in developing and implementing both ambient and targeted monitoring activities. The Section will also work with other watershed partners

to develop collaborative approaches to using monitoring resources within the watershed and will help to develop indicators for identifying impaired waters for targeting negotiations in Step 3.

Step 3: List and Target Environmental Concerns

- The Section will present data assessments to assist the advisory committee in targeting specific project objectives for the watershed.

Step 4: Develop Management Strategies and Measures of Success

- Staff will assist with development of environmental measures of success for targeted management strategies and monitoring programs to measure progress.

Step 5: Compile the Watershed Plan

- The Section will provide water quality assessments for use in the watershed plan. The plan will be used to fulfill various Clean Water Act reporting requirements including Section 305(b) assessments. The Section will also ensure that the plan meets the minimum requirements for Clean Water Act sections for which it is submitted to fulfill.

Step 6: Implement and Evaluate Watershed Plan

- The Section will undertake monitoring as part of a measure of success.

Water Quality Planning Section

The Water Quality Planning Section's activities fall into two general categories: regional water quality management planning (in accordance with Section 208 of the Clean Water Act); and departmental planning, including the department's work in protecting water quality. Regional water quality management planning is coordinated with federal, state, local and regional agencies, as well as the general public. The section's departmental planning activities include integrated strategic short and long-term planning for the division, individual work plans for specific programs, and preparing and tracking Water Quality Division budgets and grants that support division activities.

The Regional water quality management planning process is described in the *State of Arizona Continuing Planning Process for Water Quality Management* (CPP) document. While ADEQ is the state planning agency for water quality, five Councils of Governments, plus La Paz County, serve as designated planning agencies (DPAs) for specific regions of the state. The section works closely with the DPAs, who, in turn, coordinate planning for their member entities and designated management agencies. The DPAs develop, update and amend areawide waste management plans ("208" Plans) for the areas within their geographic boundaries. DPAs also provide opportunities for public input and involvement in the development of their 208 Plans. The Water Quality Planning Section is responsible for ensuring that proposed construction of waste treatment facilities and water quality permits conform to the regional 208 Plan and/or that amendments to the plan are made in accordance with the CPP.

The Planning Section includes oversight of the Federal Construction Grants Program for construction of wastewater treatment facilities. The Section also develops evaluation and progress reports for

federally-funded activities of the department and works closely with EPA in developing joint strategies, such as the watershed approach and establishment of joint ADEQ/EPA watershed priorities.

As the agency moves toward a comprehensive watershed management approach, input from watershed advisory groups will guide the allocation of department staff and budgets among the individual watersheds. This guidance will assist the department in designing watershed-based program plans to support federal performance partnership grants that allow flexibility in the allocation of federal funding across the various programs.

Step 1: Stakeholder Outreach and Involvement

- The Water Quality Planning Section will contribute 208 planning information for water quality status presentations and will coordinate with Councils of Governments in targeting appropriate audiences.

Step 2: Collect and Evaluate Watershed Data

- The Water Quality Planning Section will work with designated planning agencies to update specific 208 planning information.

Step 3: List and Target Environmental Concerns

- The Section will provide planning guidance for this step.

Step 4: Develop Management Strategies and Measures of Success

- The Section will assist advisory committees in developing action plans with corresponding budgets for management strategies.

Step 5: Compile the Watershed Plan

- The Section will help in compiling the planning and budgetary aspects of the watershed plans. The Section will work with planning agencies to ensure that the watershed plan and the 208 plans are consistent.

Step 6: Implement and Evaluate Watershed Plan

- The Section will assist in employing evaluation tools such as environmentally-based performance measures to track effectiveness of activities specified in the watershed plans. Support for implementation of activities in the individual watersheds will include guiding the development of annual strategic planning documents, developing discrete watershed budgets with corresponding work plans, and incorporating the watershed plans into a comprehensive agency plan.

Other ADEQ Divisions and Offices

Waste Programs Division

The ADEQ Waste Programs Division is responsible for a number of programs relating to the handling, management and disposal of solid and hazardous waste and pollution from leaking underground storage tanks. Major programs include pollution prevention and remedial projects (federal Superfund and state Water Quality Assurance Revolving Fund), and regulation of hazardous waste, of used oil, of underground storage tanks, and of solid waste. The distinction between waste and water quality programs is not exact. Often, the main interest in waste programs is prevention or remediation of ground water contamination. State laws on remedial projects are included in Chapter 2 - Water Quality Control of Arizona Revised Statutes Title 49 - The Environment, and reflect the greater concern for ground water contamination, as opposed to soil contamination where there is limited or no threat to ground water.

Synchronization of department activities within a geographic area and close interaction with local citizens and governments are critical components of a watershed approach. From a citizen perspective, the distinction between waste and water quality programs is generally lost. As far as people are concerned when ADEQ is working to protect ground water, which is the source of drinking water for most Arizona communities, it is one agency. Discussion of citizen concerns and providing up-to-date information on the status of ground water and of efforts to prevent pollution of aquifers or to clean up already contaminated aquifers needs to cut across ADEQ divisional lines.

The watershed approach provides the framework for coordinating outreach and the dissemination of information and obtaining citizen input on water quality concerns. Watershed advisory groups and the regular meetings they hold provide an excellent "one-stop" forum to consolidate information on water quality within a geographic locale. Incorporating waste programs into the watershed framework is an evolutionary process that will follow the development of local advisory groups and expressed local needs.

Air Quality Division

The Air Quality Division is responsible for controlling air pollution through several mechanisms. Most notable among these are monitoring ambient air quality through direct measurement, modeling of air quality (primarily to determine the potential impact of a proposed source), permitting sources to regulate the types and amounts of pollutants emitted, compliance and enforcement actions for

violators, automobile emission inspection and certification in areas which do not meet air quality standards, and planning support to achieve air quality goals.

Direct impacts of air quality on surface and ground water quality are difficult to identify and quantify, and it is not believed to be significant in Arizona. However, in much the same way as with waste programs, people think of ADEQ as a single agency. Indeed, air quality management has long been thought of in terms of geographic regions called "airsheds." Thus, as a way to better serve the needs of the citizens and the environment, it seems natural to incorporate air quality issues) particularly providing citizens and local government with information) in a manner similar to that proposed for waste programs.

Information Systems Development Office

ADEQ was established as an independent department in 1987, assuming the duties of the Environmental Division of the Arizona Department of Health Services. At that time, its duties were mostly limited to wastewater treatment, drinking water systems, and landfills. Since then, the passage of additional federal and state environmental laws has greatly expanded the department's responsibilities and the need to manage large amounts of data for permitted facilities and a myriad of environmental data sets for air, water, and land. This also came during the explosion in computers and information technology. As a result, much of ADEQ's data and files handling is inconsistent and often the result of individual programs having to create their own systems quickly in order to get their immediate work done.

ADEQ management recognized the need to modernize and consolidate the department's data systems and established the Information Systems Development Office (ISDO) in January 1996. Its task is to initiate a major overhaul of the department's information systems and information management during the two-year lifespan of ISDO. Key components of the ISDO's work include linking the various data sets within a geographic information system that identifies environmental data by location, notably watersheds.

Ready access to environmental data on a geographic basis is essential to effective resource management at the local level. The internal ADEQ team that was responsible for developing the concept and preliminary draft watershed framework have actively communicated with the ISDO team to better align the work of ISDO with the watershed approach.

ARIZONA STATE AGENCIES AND PROGRAMS

Arizona Department of Water Resources

ADWR is responsible for the general control and supervision of Arizona's waters, the appropriation and distribution of these waters, including interstate streams, dams and reservoirs, agricultural improvement districts, drainage districts, irrigation districts and delivery systems, soil and water conservation districts, flood control, and water augmentation projects.

The Arizona Water Protection Fund was established in 1994 to provide monies "for the development and implementation of measures to protect water of sufficient quality and quantity to maintain, enhance, and restore rivers and streams and associated riparian habitat." This includes fish and

wildlife species that are dependent on riparian resources. These grant monies are obtained from the State General Fund, a fee collected for CAP water, and from private gifts, grants, and donations. The Legislature appropriated $4 million for fiscal year 1994-95, $6 million for fiscal year 1995-96, and $5 million for each fiscal year thereafter, less monies collected for the CAP water.

The Department of Water Resources is statutorily directed to plan and manage water resources in Arizona. Arizona Revised Statutes (A.R.S.) Section 45-105 states that the Director may develop programs for surface water and ground water, including management of watersheds, and collect information for the development, conservation, and utilization of waterways, watersheds, surface water, ground water, and ground water basins in this state.

The statewide Water Planning and Legal Services Division includes three groups: Office of Legal Services, Water Resource Planning Section, and Third Management Plan Development Group. The Water Resource Planning Section develops statewide long-range planning for surface and ground water. Staff for the Water Protection Fund are also in this section. This section is currently involved in stakeholder outreach through organizations such as the Verde Watershed Association (VWA) and the NRCC (Natural Resources Coordinating Committee) and is also active in data collection and evaluation, targeting concerns, and developing long-term monitoring and water management strategies.

ADWR administers the Arizona Water Protection Fund Commission for protection of riparian areas, and is active, for example, in outreach and targeting concerns in the San Pedro and Verde River Watersheds. Watershed Management objectives of the Water Resource Planning Section include ADWR's cooperative efforts with the University of Arizona, National Oceanic and Atmospheric Administration (NOAA) and the National Center for Atmospheric Research to assess the feasibility of weather modification as an augmentation alternative. The department is also participating in the Arizona Water Resources Study which is evaluating vegetative management as an augmentation alternative.

The Groundwater Management Division includes the Groundwater Management Support Section, Office of Assured and Adequate Water Supply Certification, and the five Active Management Areas (AMAs).

The Surface Water Management Division includes the Adjudications Section, Surface Water Section, and Flood Warning and Dam Safety Section. ADWR is responsible for design and installation of flood warning systems, and gauge maintenance, in areas such as the Oak Creek/Sedona subwatershed. A cooperative effort for data collection and evaluation exists between ADWR's Flood Warning Unit, the National Weather Service (NWS), and the Maricopa County Flood Control District. ADWR's Dam Safety Unit informs ADEQ's Aquifer Protection Permit Mining Unit of geotechnical concerns such as earth fissures. The Dam Safety Unit reviews plans and specifications for existing and proposed dams and flood control structures, excluding tailings dams. The Dam Safety Unit retains supporting documentation for sites, including hydrologic, hydraulic, and soils data.

The Information Technology Division includes geographic information systems (GIS) staff. With stakeholder input from the Verde Cooperative River Basin Study, staff has created maps on the Internet.

The Hydrology Division uses computer models to predict, for example, the extent of overdraft in Arizona's ground water basins in the future. The Basic Data Section collects water quantity data, including flow measurements.

Cooperative efforts between ADEQ and ADWR exist in each of the six steps. There are opportunities for ADEQ and ADWR to interact extensively in the initial four steps in developing basin plans:

- Stakeholder Outreach Involvement
- Data Collection/Evaluation
- List and Target Concerns
- Develop Management Strategies

ADWR's Adjudications (Water Rights), Flood Warning, and Planning programs could interface with ADEQ's Nonpoint Source, Aquifer Protection Permit (APP), Surface Water Monitoring, and Environmental Education programs during Step 1.

ADWR's Basic Data, Information Technology, and Planning groups could interface with ADEQ's Nonpoint Source, Aquifer Protection Permit (APP), Surface Water Monitoring, Groundwater Monitoring, Remedial Projects (WQARF, Federal Facilities), and Hazardous Waste programs during Step 2.

ADWR's Groundwater Management, Hydrology, and Planning programs could interface with ADEQ's Planning, Drinking Water, Nonpoint Source, Surface and Groundwater Monitoring programs during Step 3.

All ADWR divisions listed above as well as all ADEQ programs listed in Step 3 should have the opportunity to participate in Step 4.

Arizona Department of Health Services

The ADHS Division of Disease Prevention is concerned with communicable disease prevention, including immunization and sanitation, chronic disease epidemiology with includes the cancer and birth defects registries, health promotion and education, and risk assessment and investigation of environmentally-linked diseases. ADEQ has executed an interagency agreement with the Division of Disease Prevention to establish and maintain a core staff to support ADEQ work. The staff conducts health risk assessments and health effect studies, assists in developing water quality standards, reviews and evaluates the health ramifications of aquifer reclassification petitions, provides emergency health risk assessments for hazardous substance spills, and analyzes evidence of human population exposures that could result in adverse health effects.

The ADHS state laboratory licenses other laboratories in Arizona, provides training for laboratory personnel from other laboratories, and analyzes environmental samples. ADEQ has executed an interagency agreement with the state laboratory to conduct analyses for water quality samples taken by ADEQ.

Arizona Game and Fish Department

In 1990 Arizona voters approved the Heritage Initiative which created the Arizona Heritage Fund. Through this fund, $20 million per year of lottery funds are dedicated to the protection of Arizona's natural and cultural heritage under the direction of the Arizona State Parks Board and AGFD. These two agencies equally divide this money for specific environmental programs and acquisitions. AGFD uses these funds for such purposes as habitat inventory, acquisition, identification, and habitat evaluation and protection, and environmental education.

A voluntary "check-off" on Arizona state income tax refunds allows taxpayers to contribute all or a part of their refund in support of AGFD's nongame wildlife programs. This fund was established to assist with activities related to game, nongame, fish, and endangered species. For example, monies have been used for protecting endangered species and researching techniques for protecting various species.

The AGFD maintains a database, called the AGFD Heritage Data Management System, of locality information for threatened, endangered, and sensitive plants and wildlife. This database provides a means to identify sensitive species which may be found in an area proposed for development and as such assists in avoidance of impacts.

An Intergovernmental Agreement between AGFD and ADEQ establishes a partnering effort for implementing nonpoint source water quality pollution programs for riparian activities. This agreement was finalized on December 2, 1992 and does not have a specified termination date. (Either party may terminate this agreement with a 30-day written notice.) This agreement enables each agency to contribute and exchange data for research and management of riparian resources and to provide, upon request, technical expertise and support not otherwise available to the other party. Additionally, this agreement supports the objectives of Executive Order 91-6 which states that the policy of the state shall be: to recognize that the protection and restoration of riparian areas are of critical importance to the state; and to actively encourage and develop management practices that will result in maintenance of existing riparian areas and restoration of degraded riparian areas.

Arizona Department of Agriculture

On January 1, 1991, the Arizona Department of Agriculture (ADA) assumed the authority, powers, duties, and responsibilities of the former Commission of Agriculture and Horticulture. The department has the authority to regulate most aspects of agriculture in Arizona, including the sale and use of pesticides. The State Agricultural Laboratory, a division of the department, provides residue analysis of irrigation water. Pesticide monitoring results must be reported to the Department. ADEQ consults with the department to establish numeric values regarding pesticides and to determine the toxicological significance of pesticides and their degradation products.

Arizona State Land Department

The State Land Department manages and administers all state lands, except those under the specific use and control of state institutions. Perhaps the most important duties of the State Land Department is as trustee for state lands granted to Arizona by the federal government to support several funds created to finance public schools; the state universities; public buildings; the state hospital; schools

and asylum for the deaf, dumb, and blind; the miners' hospital for disabled miners; and state military institutes. Each parcel of beneficiaries' land is held separately in trust and managed by the State Land Department. As trustee, the State Land Department is required to seek the highest and best use for the land to maximize income for each of the individual beneficiaries. Lease income and interest from the sale of state land and timber, minerals, gravel, or other natural products of the state lands are used to finance the various funds.

The State Land Commissioner is the Director of the State Land Department and is appointed by the Governor. The State Land Department must cooperate with appropriate agencies concerning water quality matters relating to the development of state lands. The Department has no direct authority to regulate the quality of water on state land, but the Department and its lessees are directly impacted by other rules and regulations promulgated by ADEQ and other regulatory agencies. The State Land Department is mandated to protect the value of lands for the benefit of the State Trust and to encourage the management of state land so that values are not degraded.

The State Land Department has responsibility for maintaining a geographic information system for public agencies in Arizona and to establish a clearinghouse for data and a central repository for maps, imagery products, and cartographic data. The Arizona Geographic Information Council (AGIC) was established by Executive Order to coordinate the management of statewide geographic information. AGIC serves as an advisory council to the State Land Department to provide guidance and direction in the management of the state's GIS system and geographic data in Arizona. AGIC also ensures that public decision-makers, as well as private individuals, have access to geographic information that is complete, timely, accurate, and reliable. The State Land Department provides current land resource information in the form of maps and inventories and monitors changes over time. The State Land Department, through an interagency agreement, provides ADEQ with hydrologic and pollutant source maps.

Arizona State Parks

In 1990 Arizona voters approved the Heritage Initiative which created the Arizona Heritage Fund. Through this fund, $20 million per year of lottery funds are dedicated to the protection of Arizona's natural and cultural heritage under the direction of the Arizona State Parks Board and Arizona Game and Fish Department. These two agencies equally divide this money for specific environmental programs and acquisitions. The State Parks Board is authorized to use its funds for the development and acquisition of parks and natural areas, historic and cultural preservation, and for matching grants to local groups for parks, trails, environmental education, and cultural resources. This funding source enables the protection of riparian habitat through the acquisition of lands expressly for habitat protection.

Arizona Department of Transportation

The ADOT's Highway Division plans and develops roads and transportation facilities within the state of Arizona. ADOT does not have a mandate to preserve and protect riparian areas, but it has developed a wetlands preservation policy. This policy recognizes the importance of wetlands and promotes their protection through avoidance, minimization, and compensation practices.

A partnering agreement between ADOT and ADEQ Water Quality Compliance Section was signed on April 28, 1994 and is effective until terminated by either party. It includes a mutual commitment to respond to the needs of each Agency and the public; promote customer service; provide public safety and mobility; and enhance environmental quality.

University of Arizona Cooperative Extension

A partnering effort exists which enabled the development of a comprehensive education and training program to assist owners/operators of regulated agricultural activities (nitrogen management of irrigated agriculture and concentrated animal feeding operations) to comply with the law. This program effort is the result of a 319(h) project and has been integrated into the current Cooperative Extension framework to facilitate the dissemination of information to a significant percentage of the regulated agricultural activity owners/operators within the state.

Arizona Corporation Commission

The Arizona Corporation Commission is established by the Arizona Constitution to regulate public service corporations, including private water and wastewater companies within the state for services rendered therein. Consequently, the ACC has some authority independent of the Legislature. The Arizona Corporation Cmmission is composed of three elected commissioners. The commission requires public service corporations to obtain a Certificate of Convenience and Necessity prior to constructing any facilities. The commission may promulgate rules concerning the quality of services provided by the public service corporations. Powers of the ACC also extend to determining the safe operation of facilities. The ACC may require public service corporations to maintain and operate their facilities in a manner that will protect the public health and safety.

Under certain circumstances, the commission may require public service corporations to obtain approvals from other agencies, including the Arizona Department of Environmental Quality and the county Department of Health Services, concerning water utility and compliance with water quality related regulations, and he Department of Water Resources for an adequacy status or a certificate of assured water quality control requirements.

The Power Plant and Transmission Line Citing Committee is composed of experts from several departments, and is administered by the Arizona Corporation Commission. Power plants, which can be large dischargers, must demonstrate to the citing committee that they will meet all standards and permit conditions, including water quality control requirements.

LOCAL GOVERNMENTS, SPECIAL DISTRICTS, AND AUTHORITIES

Citizens

Certainly Arizona's citizens are the core component of local involvement. The watershed approach has several mechanisms for encouraging meaningful citizen involvement. The stakeholder involvement element described in Section 2.3 presents the various roles that a citizen can assume. Enlisting as a member of a watershed advisory group is probably the most demanding and time-consuming role available. Participating on the advisory committee for the full watershed cycle could involve regular meetings over several years. However, this role could result in having a lasting impact

on the quality of life within the watershed. Citizens can also volunteer for smaller watershed projects that have been targeted within watersheds.

The watershed approach process is set up to also incorporate intermittent citizen involvement through public meetings and newsletters. In its most advanced form, the advisory committees could support an Internet home page where citizens can provide direct input to the watershed planning process.

Local Governments

Cities, towns, counties, and special districts have an important role in planning for and implementing water quality management programs in Arizona, at both the local and statewide level. Federal environmental statutes recognize the regional nature of numerous water quality problems and solutions, and thus provide for areawide planning and responsiveness to local concerns (CSW Section 208). Included within the jurisdiction of local agencies or management of publicly owned waste treatment works, planning for waste treatment needs, landfills, and urban stormwater runoff.

Councils of Governments

The Councils of Governments (COGs) are nonprofit corporations composed of representatives of city and county governments within the boundaries of particular "development" districts established under the Economic Development Act of 1965. The act divided the state into six planning areas and directed that all regional or areawide planning functions conform to those prescribed planning areas. In Arizona, the COGs were established by Executive Order 70-2. Section 208 of the CWA required the governor of a state to designate areas of the state with water quality control problems and identify agencies capable of developing effective areawide wastewater treatment management plans for those areas. Pursuant to that requirement, in the mid-1970s, the COGs were designated the areawide planning agencies for the purposes of water quality planning.

The COGs and ADEQ have a unique and every valuable relationship in WQM planning, starting with the WQM planning partnership role established by CWA Section 208 (see Appendix V). The COGs provide a vehicle through which local governments may participate in the WQM planning process. They provide technical assistance to local entities in the preparation,, amendment and update of areawide WQM plans, including promoting and ensuring adequate public participation in plan development and adequacy of plan amendments.

The COGs assist the local/state agency information exchange, public participation processes, and help elevate local needs and priorities to ADEQ's attention for consideration in its statewide WQM program efforts. All major regional policy decisions are reviewed and approved by the COG decision-making bodies, or regional boards, which are comprised of local elected officials. The COGs will be key stakeholders - with significant roles in targeting, priority setting, and development of management strategies.

County Health Departments and Departments of Environmental Quality

County Health Departments and County Departments of Environmental Quality have a vested interest in environmental quality as it relates to the health of their county's citizens. Agents of the county, through local ordinances, oftentimes are the most effective mechanism for abating activities that

compromise public and environmental health. While county governments are usually overloaded and under funded, they are still effective for the following reasons: they are geographically close to the problem at hand, they understand and are able to enforce local ordinances, they have a rapport with the locals, and they are knowledgeable about local conditions including political issues.

Creating a liaison with the County Health Departments and County Departments of Environmental Quality under the watershed framework would create an win-win situation. County governments, which have very little money earmarked for monitoring and assessment, would benefit from having other entities identify environmental problems for them while state and federal agencies would benefit from having environmental and public health problems remedied by the county governments.

The Salt River Project (SRP) operates under the auspices of the Bureau of Reclamation and is actually two companies--a large electric utility company and a water user's association which provides irrigation water. In order to protect its water resources from contamination and to deliver adequate quality water for irrigation, SRP conducts numerous water quality management activities. These include monitoring the quality of ground and surface waters in the Salt and Verde River watersheds, SRP service area, and SRP canals.

Sanitary districts are units of local government that assist in the water quality management process by providing a mechanism to implement sewage treatment measures where public systems are not available. Sanitary districts are capable of becoming designated management agencies for implementation of Section 208 of the Clean Water Act and water quality management plans.

Natural Resource Conservation Districts (NRCDs) have been established through state law and work in cooperation with the Natural Resources Conservation Service to assist private landowners and users, and state land holders with conservation planning and technical assistance. In Arizona, 31 NRCDs have been established, in addition to seven Soil and Water Conservation Districts established under tribal law. Districts are empowered to conduct surveys, investigations, and research related to soils, soil erosion prevention, and farm and ranching practices. Additionally, districts may conduct demonstration projects to show the means, methods, and measures by which soil and resources may be conserved or controlled. A partnering effort is underway involving ADEQ, the USDA NRCS, Arizona Association of Conservation Districts, and U.S. EPA Region IX.

Tribal Governments

Amendments to the Safe Drinking Water Act in 1986 and the Clean Water Act I in 1987 specifically provided for tribes to be "treated as states." To obtain this status under either act, tribes must demonstrate to EPA that they are federally recognized, carry out substantial government duties and powers, have jurisdiction over the water resources they propose to manage and regulate, and have administrative capability.

Section 518 of the Clean Water Act states that tribes can obtain"treatment as a state" status under Title II and Sections 104, 106, 303, 305, 308, 309, 314, 310, 401, 402, and 404. To date, several tribes in Arizona have received "treatment as a state" status under various sections of the Clean Water Act. The Navajo Nation has received "treatment as a state" status under the Safe Drinking Water Act.

Tribal governments may elect to administer the watershed approach for their lands. They have the option to serve as lead coordinator for advisory groups in regions of the state where they are a significant landowner. Tribes can also administer the watershed cycle for watersheds that are nested within a watershed. In this capacity they would be designated as a targeted watershed within the larger advisory group. Acting as a targeted watershed would facilitate coordinated support from partner agencies. Because of their special status, tribal governments will have a significant role in all steps of the watershed approach. A Memorandum of Understanding has been drafted between ADEQ and the San Carlos Apache Indian tribe. This agreement may serve as a model for other ADEQ / Tribe partnerships under the watershed approach.

Federal Agencies

An assortment of federal agencies bears responsibility for managing a variety of water quality protection and water resource development programs. Some of these programs are regulatory in nature, while others are research and information oriented, and still others involve the financing, planning, design, or construction of capital infrastucture and other public works (such as sewage treatment and flood control). In addition, the federal government owns approximately 31 million acres (43% of the land area) in the state, either as trustee (e.g. Indian reservations), landlord (e.g. military reservations or grazing allotments leased from the BLM), or direct manager (e.g. national forests and parks). With such wide-ranging responsibilities as both regulator, public works agency, and landowner, the federal government may fill many roles within a watershed approach. The following descriptions of the major federal agencies is meant to summarize their key responsibilities which have impacts on any efforts toward watershed-based management.

Independent Federal Agencies

Independent federal agencies are those which have been created in law by Congress but which do not reside within a Cabinet-level department, as in the case of agencies like the U.S. Forest Service, which is under the Secretary of Agriculture. Key independent federal agencies whose responsibilities would impact watershed-based efforts include the following:

- United States Environmental Protection Agency, due to its encompassing role as the nation's primary environmental regulator, both at the national and international level and the regional level within each of ten regions covering several states apiece.

- Federal Emergency Management Agency due to its role for delineating and regulating flood-prone areas which have impacts on riparian and wetland health as well as economic matters within flood-prone communities.

- National Aeronautics & Space Administration for its part in gathering environmental information from research aircraft and satellites.

- National Science Foundation for its ability to fund scientific research related to the environment.

U.S. Environmental Protection Agency: To be provided.

AGENCIES WITHIN CABINET-LEVEL DEPARTMENTS

These agencies all fall under the authority of the Executive Branch (President), through the respective Cabinet Secretaries. Key departments of the federal government whose subordinate agencies bear responsibilities which would impact watershed-based efforts include the following:

- Department of Agriculture
- Department of Interior
- Department of Defense
  - Department of the Army
  - Department of the Air Force
  - Department of the Navy

U.S. Department of Agriculture

The U.S. Department of Agriculture is the umbrella organization for two federal agencies with significant roles relating to water quality management.

Natural Resources Conservation Service: The NRCS provides technical assistance to land owners and farm and ranch operators, including Indian tribes, through locally organized conservation districts. This includes assistance with development and implementation of best management practices such as pesticide management, irrigation water management, waste management, and other conservation practices. The NRCS mission covers three major areas: soil and water conservation, natural resource surveys, and community resource protection and management. With increased attention given to nonpoint sources of groundwater contamination traceable to agricultural practices, NRCS has assumed an important role in developing methods of fertilizer and pesticide application and ways to handle animal waste to reduce groundwater contamination.

A partnering effort has been initiated to strengthen cooperation, collaboration, communications, and customer services for the ADEQ, USDA Natural Resources Conservation Service, the Arizona Association of Conservation Districts, and the U. S. EPA.

U.S. Forest Service: A 1993 report by Arizona Game and Fish Department estimated that 31.3%, or 1,573.5 miles of the state's perennial waters are located on Forest Service land. In Arizona, there are six national forests: Tonto, Prescott, Coronado, Apache-Sitgreaves, Coconino, and Kaibab. Each individual forest unit develops forest plans to guide management of their resources, including standards and guidelines for riparian management.

An Intergovernmental Agreement, finalized on December 18, 1990, establishes a formal agreement between USDA-FS and ADEQ for implementing nonpoint source water quality pollution prevention plans on lands managed by the U.S. Forest Service in Arizona. Specifically, each agency agrees to manage all resources and operate their programs to achieve federal water quality goals and state water quality standards. The most practical and effective means of controlling potential nonpoint source pollution from forest and rangelands is through the development and implementation of best management practices.

U.S. Department of the Interior

U.S. Bureau of Indian Affairs: The Bureau of Indian Affairs is charged with protecting and managing the trust resources of tribes, which includes protection and enhancement of water quality.

U.S. Bureau of Land Management: BLM is the steward of 12.5 million acres of arid lands in Arizona. The BLM uses the Federal Land Policy Management Act (FLPMA) as guidance for its land use planning. Under FLPMA, public lands must be managed to protect the quality of ecological, environmental, and water resource values, including riparian areas. According to an Arizona Game and Fish Department report (1993), 5.8%, or 289.07 miles of the state's perennial waters are located on BLM lands. This agency also administers energy and mineral resources where the surface is private, but the mineral rights are retained by the federal government. Proper management of both the surface of the land and mineral estate is necessary for the protection of ground water quality.

BLM has regulations for such activities as grazing, timber harvest, coal mining, metal mining and processing, and oil and gas production. These regulations reflect their policy "to protect, maintain, restore and/or enhance the quality of water on public lands so that its utility for other dependent ecosystems, including present and/or desired human environments, will be maintained equal to or above legal water quality criteria."

An Intergovernmental Agreement exists between ADEQ and the USDI Bureau of Land Management for implementing nonpoint source water quality pollution prevention programs on lands managed by the BLM in Arizona. These agencies agree that the most practical and effective means of controlling potential nonpoint source pollution sources on lands managed by the BLM is through the development and implementation of best management practices.

U.S. Bureau of Reclamation: The Bureau of Reclamation manages water development projects, including the Central Arizona Project (CAP), all of the dams on the Colorado River, and several other dams that provide power, water and recreation. The bureau administers the Lower Colorado Management Program, which manages the Colorado River south of Davis Dam near Bullhead City. Objectives of this program include flood, sedimentation and salinity control; water salvage; protection of the environment; preservation and enhancement of fish and wildlife resources; and recreational development. Bureau of Reclamation is authorized to investigate, design, construct and operate the Colorado River Basin Salinity Control Project.

Bureau of Reclamation has several water quality management functions. Certification of lands for adequacy of irrigation by Bureau of Reclamation ensures that only those lands suitable for irrigation receive water from Bureau of Reclamation projects. Lands with good characteristics for agriculture require less water for leaching and fewer additives (e.g., fertilizer), thus minimizing water contaminants and irrigation return flows to surface water. Bureau of Reclamation monitors water quality of return flows from numerous project lands for total dissolved solids and toxic constituents.

Bureau of Reclamation makes use of best management practices on a case-by-case basis. The agency’s technical, financial and planning functions indicate the Bureau of Reclamation may have a potential role as a cooperator in developing and implementing best management practices.

Although Bureau of Reclamation has primarily been concerned with water control structures in the western states, the agency is becoming more involved with programs that have direct as well as secondary effects on water quality. In Arizona, Bureau of Reclamation is involved in several water-related development and management projects, such as the CAP safety of dams work on the Salt and Verde Rivers, front work and levee system-related operation and maintenance activities on the Colorado River. Working with the Fish and Wildlife Coordination Act, Bureau of Reclamation has opportunities for restoring and enhancing riparian and wetland habitat. Such activities include Cook's Lake two miles north of the confluence of Aravaipa Creek and the San Pedro River, the Tonto Creek Riparian Unit, backwater restoration along the Colorado River, Topock Marsh, and coordinated efforts on four refuges.

***U.S. Fish and Wildlife Service*:** Under the Fish and Wildlife Coordination Act, the USFWS (and the National Marine Fisheries Service) is empowered to evaluate federal projects and federally-permitted projects for their impact on wildlife resources. The Corps of Engineers must therefore consult with the USFS concerning the impact of Section 404 permit activities on wildlife resources.

The USFWS' Partners for Wildlife stewardship program promotes partnerships between the USFWS and others for restoring, enhancing, and maintaining valuable wildlife habitat while keeping the land in private ownership. Through this program, individuals such as ranchers and farmers, or organizations such as government agencies can improve and protect habitat for fish and wildlife on nonfederal lands with the assistance of the USFWS. Such help includes designing and carrying out habitat management projects, technical assistance for wetland restoration, soil and water quality improvements, grazing plans, reducing pesticide use, and creating shelter for fish and wildlife. Available funds are usually limited to $10,000 per landowner.

National Park Service: A Memorandum of Understanding between the National Park Service and ADEQ establishes a partnering effort for pollution prevention on lands managed by the National Park Service. This effort includes nonpoint source water quality programs; point source water quality programs; safe drinking water programs; Clean Water Act Section 402 (NPDES) programs; air quality programs; solid and hazardous waste programs; and toxic substances programs. This agreement was signed on March 30, 1993 and will remain in effect until either party terminates with a 60-day written notice.

U.S. Geological Survey (USGS): The USGS was established by Congress in 1879, with later legislation expanding its mission to include gage streams and study water resources throughout the nation. The Water Resources Division develops hydrologic data necessary for managing the nation's water resources. Due to increased concerns over the vulnerability of ground water to be contaminated by both point source and nonpoint source pollution, this division has increased its efforts in gaining knowledge of ground water processes, including flow dynamics, solute transport, and geochemical and biological actions affecting contaminants in ground water. The USGS provides assistance to federal agencies through contributions to and review of environmental impact statements and as a contractor for studies and investigations under the Department of Defense Installation Restoration Program and other programs to comply with state environmental regulations.

General: The USGS's interest in water quality can be traced to 1879 when it first reported analyses of natural waters. In 1902, the USGS began work on differentiating between "normal" and "polluted" water and determining the degradation of municipal water supplies caused by municipal and industrial

wastes. The USGS continued these contamination studies until 1912 when Congress established the U.S. Public Health Service with the mandate to study sanitary water quality.

The USGS's first systematic nationwide monitoring program for assessing the mineral character of streams and lakes began in 1905 and continued until 1907. Upon passage of the Water Quality Act of 1965 and the Clean Water Act of 1972, the USGS established several nationwide monitoring networks to evaluate trends in water quality over time. The USGS has been, and continues to be, the leader in water quality monitoring and scientific water quality studies.

The USGS will be a key partner in monitoring within the watershed framework. The collective USGS knowledge in the areas of monitoring and assessment will be important during the data collection and assessment phases. Their pool of field equipment and access to national databases will also be useful during these phases. The USGS has established monitoring stations on rivers within the state that will need to be incorporated into any future monitoring activities undertaken in the watersheds. USGS field personnel have the training and equipment necessary to access remote areas and sample larger rivers in a safe manner and may be contracted to do so.

U.S. Department of Defense

Department of the Army Potential roles for the U.S. Army stem from both the considerable areas under the direct control of the Army and the regulatory responsibilities of the U.S. Army Corps of Engineers for Waters of the United States. Major land holdings include the Yuma Proving Grounds and Fort Huachuca. The operation of both of these facilities has potential impacts on surface and groundwater quality and quantity, hence coordination with the command structure of these facilities and their subordinate public works, operations, and environmental divisions could enhance the effectiveness of the watershed approach. The regulatory responsibilities are described in greater detail as follows:

U.S Army Corps of Engineers: The Clean Water Act (CWA) is the principal law authorizing wetlands regulation. Section 404 of the CWA gives the Corps of Engineers authority to issue permits for the discharge of dredged and fill material into waters of the United States, including wetlands. Additionally, Section 401 of the CWA requires state water quality certification for federal permits, licenses, or approval for actions which result in a discharge to waters of the state. Therefore, for most Section 404 permits, a Section 401 certification is needed from ADEQ before the permit can be approved. (EPA issues water quality certification on tribal lands).

A recent decision of the U.S. District Court for the District of Oregon ruled that state water quality certification (Section 401) was necessary for all federally permitted activities that may affect water quality. In this case the issue was that of USFS-issued grazing permits. While not binding outside the District of Oregon, subsequent decisions at the Appellate or Supreme Court level or a similar decision within the Arizona District Court may impose similiar requirements within Arizona (currently, ADEQ provides state water quality certification for federal grazing permits).

Department of the Air Force: The U.S. Air Force controls significant areas of Arizona, including the Barry M. Goldwater Air Force Range, active and retired Air Force bases, and government-owned/contractor operated (GOCO) manufacturing facilities, such as Air Force Plant 44, currently a National Priority List "Superfund" site due to ground water contamination. Coordination regarding

these Air Force facilities may offer opportunities to further enhance the effectiveness of the watershed approach.

Department of the Navy: The United States Navy is ultimately responsible for the Marine Corps Air Station at Yuma. Thus, the participation of the U.S. Navy or Marine Corps within a watershed approach may be beneficial in addressing specific issues in a manner similiar to that for Army or Air Force facilities.

U.S. Department of State/Estados Unidos Mexicanos Ministeros Estada

International Boundary and Water Commission: The International Boundary and Water Commission (IBWC) was created in 1889 to resolve recurring boundary location issues between the United States and Mexico caused by the meandering Rio Grande and Colorado River. The IBWC has separate cooperating U.S. and Mexican Sections, which are attached to the U.S. Department of State and the Republic of Mexico Ministry of State, respectively. In 1944 the IBWC found its authority expanded to include lead responsibility for border water sanitation projects mutually agreed upon by both countries. Currently the IBWC is involved in the planning, construction, operation, and maintenance of several wastewater treatment plants in the border area.

As the diplomatic agency responsible for transboundary water and wastewater issues, the IBWC's legal role bridges the disparity between U.S. and Mexico water resource administration. With some notable exceptions (primarily international treaties involving quantity and quality of Colorado River water delivered to Mexico from the United States), water resource management authority is vested at the state level in the United States, whereas, in Mexico, water resource management authority is vested at the federal level. In light of its legal responsibilities for international diplomacy, the IBWC needs to function as a facilitator and vehicle for binational communication at the federal level for watershed issues which transcend the U.S.-Mexico border.

U.S. Department of Health & Human Services

***U.S. Indian Health Service*:** Organized within the Department of Health and Human Services, the Indian Health Service has a statutory mandate to protect and improve the health of Indian people. IHS's Office of Environmental Health assists tribes in designing and constructing water and wastewater treatment facilities.

Interest Groups

The participation of interest groups can be critical to the success of the watershed approach. Interest groups have the same opportunity to participate as other stakeholders. That is, participation on advisory committees, project teams, and local watershed initiatives. Interest groups can help with communication of watershed cycle proceedings through their membership newsletters and meetings. Many interest groups are already active in existing Arizona watershed associations and initiatives.